

Date: Wednesday, 1/23/2008 11:27:46 AM
 User: Kim Johnston

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : SA 315B LAMA SKID ASSY RH
 Job Number : 36900
 Estimate Number : 12828
 P.O. Number :
 This Issue : 1/23/2008 S.O. No. :
 Prsht Rev. : NC Part Number : D315668012
 First Issue : / / Type : LANDING GEAR Drawing Number : D2904 REV. A-B
 Previous Run : 31825 Drawing Revision : A-B
 Material :
 Due Date : 2/10/2008 Qty: 1 Um: Each
 Written By :
 Checked & Approved By :
 Comment : Est Rev:A New Issue 07-04-12 JLM

Additional Product

Job Number:



Seq. #: Machine Or Operation: Description:

1.0 DC DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Photocopy bluefile & type labels per PPPD315-668-012 CHG 001

5 08/05/01

2.0 D2904B 315 Skidtube Ext.(Bent)



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

315 Skidtube Ext.(Bent)

Batch: B36926

DP

8-4-15

3.0 D2910 Doubler (Lama skid)



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Doubler (Lama skid)

BATCH: B31822

DP

8-4-15

4.0 D2911 Doubler (Lama Skid)



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Doubler (Lama Skid)

BATCH: B36928

DP

8-4-15

5.0 D2912 Doubler (Lama Skid)



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Doubler (Lama Skid)

BATCH: B31829

DP

8-4-15

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
		During inspection it was found that rivets had the steam break off in side the rivet.		Change MS 206014 443 to MS 206014 443 Bk				S 06/04/28
		Rf. too short a rivet.		Wrong Page.				

NOTE: Date & initial all entries

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Seq. #:

Machine Or Operation:

Description:

6.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Cut D2904b to length as per dwg D2904

2-Drill aft and fwd cap holes as per dwg D2904 using DT8025 jig
(SIZE)

(DO NOT OPEN TO FINISH

3-Drill saddle holes (6 Deg) as per Dwg D2904 using DT8938A jig
(ENSURE THAT LOCATOR RING IS SET FOR RH TUBE)4-Drill GHW holes (3 Deg) as per Dwg D2904 using DT8938b jig
(ENSURE THAT LOCATOR RING IS SET FOR RH TUBE)

5-Insert and cleco doublers and DT8938d in position. Transfer drill 256 holes thru tube and doublers

6-Remove, identify batch # and orientation of doublers

7-C/sink rivet holes in tube 256 places as per dwg D2904 and deburr

8-Locate from saddle holes, drill wearplate holes using DT8217. Jig must be 1.7" from aft end of tube
(REF)9-Remove fwd and aft indexing ridges as per dwg D2904. Open fwd and aft cap holes to finish size, scribe
batch # at aft end of tube

10-Remove marks left from drill jig and deburr

8-4-15

7.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

08/04/15 (X)

8.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat *****Tube & Doublers *****as per QSI 005 4.1

2T 08 04-13

9.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

08/04/12 (X)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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Job Number: 36900

Part Number: D315668012

Job Number:



Seq. #:

Machine Or Operation:

Description:

10.0

MS20601AD4W3

Rivet



Comment: Qty.: 256.0000 Each(s)/Unit Total: 256.0000 Each(s)

Rivet

BATCH:

M107376-49

SL 8-4-28

11.0

D2905

Web (Lama)



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Web (Lama)

Batch:

31065

RT 08-04-22

12.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Remove alodine around X-bolt holes on doublers

2-Rivet doublers as per dwg D2904.(DO NOT INSTALL RIVETS AROUND X-BOLT HOLES AT THIS TIME)

3-Open X-bolt spacer holes to finish size as per dwg D2904.(DO NOT USE CUTTING FLUID)

4-C'sink and deburr X-bolt spacer holes and prepare for welding

5-Blow all chips from inside tube.

6-Bond web in place per QSI 015. Allow 12 Hrs. cure time before cutting

Pick:

Qty Part Number Description Batch

A/R Sikaflex-291 107804

Sikaflex expire date: 08-10-04

Start Time: 1000 Date: 08-04-22

Fin Time: 9:00AM Date: 08/04/25

RT 08-04-22

8-4-22

13.0

D2909

Spacer (Lama)



Comment: Qty.: 11.0000 Each(s)/Unit Total: 11.0000 Each(s)

Spacer (Lama)

Batch:

212947 BE 08/04/25

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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Job Number: 36900

Part Number: D315668012

Job Number:



Seq. #:

Machine Or Operation:

Description :

14.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Weld crossbolt spacers D2909as per Dwg. D2904and QSI 004.

For D2579 spacers, weld one side, pass Y" drill, weld other side, pass Y" drill

A/R : Aluminum Rod

M106330

BE 08/04/25

(PH)

2-Grind welds as per Dwg D2909

3-Install remaining rivets around X-bolt spacers, use rivet shaver as necessary

4-Deburr, inspect tube for any visible scratches

4 8-428

15.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

08/04/29

(PH)

16.0

QC10

VISUAL WELDING INSPECTION



Comment: VISUAL WELDING INSPECTION

08/04/29

(PH)

17.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Pressure wash as per QSI 005

M. A

08/04/2

(IK)

1336900
D315668012
30/04/2008
S-153 07.25
#1 32.7 F
#2 --- F
#3 36m/s F
#4 --- F

18.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3

HL

08-04-30

19.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

FL 08/04/30 (1)

20.0

D2646

Aft Cap



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Aft Cap

Batch:





637755

FL 08/04/30 (1)

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D315-668-012 PAR #: N/A Fault Category: Prod/Skidube NCR: Yes No DQA: D Date: 08/05/05
QA: N/C Closed: D Date: 08/05/06

NCR: 36900		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
04/02/08	#14	During inspection it was found that 12 Rivets had broken off the steam Break all inside the Reheat.		Drill out affected Rivets and change from MS20601AD443 to MS 20601AD1W4 B# 19278 QTY=20	 8-4-28 06/04/09			04/06/08
		R.C. Doubler doesn't form correctly to the skip tube extrusion		Pin the doubler on the tube it self				

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Job Number: 36900

Part Number: D315668012

Job Number:



Seq. #:

Machine Or Operation:

Description:

21.0

D26483

Wearpad



Comment: Qty.: 5.0000 Each(s)/Unit Total: 5.0000 Each(s)

Wearpad

Batch: B34591

FL

22.0

D265613

Wearplate



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Wearplate

Batch: B35207

FL

23.0

D265633

Wearplate



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Wearplate

Batch: B36625

FL

24.0

D2907

Wearshoe (Lama)



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Wearshoe (Lama)

Batch: B14654

FL

25.0

ALS41032130

Insert



Comment: Qty.: 50.0000 Each(s)/Unit Total: 50.0000 Each(s)

Insert

Batch: B m105855

FL

26.0

AN960JD10L

Washer



Comment: Qty.: 54.0000 Each(s)/Unit Total: 54.0000 Each(s)

Washer

Batch: m104885

FL

27.0

MS27039108

Screw



Comment: Qty.: 54.0000 Each(s)/Unit Total: 54.0000 Each(s)

Screw

m106589 (x16) m107378 (x38)

FL 08/04/50 ①

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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Job Number: 36900

Part Number: D315668012

Job Number:



Seq. #:

Machine Or Operation:

Description :

28.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

1-Install inserts & wearplates as per Dwg. D2904. Use a drop of Sikaflex on insert holes before installing wearplates

A/R Sikaflex-291

Sikaflex expire date: 08/10

3-Inspect for foreign object per QSI 024

4-Install 2646 Aft & fwd Caps as per Dwg D2904 and seal with Sikaflex. Clean excess adhesive

A/R Sikaflex-291

Sikaflex expire date: 08/10

5-Wing Walk as per Dwg D2904 and QSI 005 4.4

m/07380

Batah:

- FL 08/04/30 0

FL
08/04/30 0
9212

29.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

2806801 00

30.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D315-668-012

Location:

PPP Rev: A

8/5/11

SS sip

31.0

QC21

FINAL-INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

08/05/05

Job Completion



mf 08-05-02

36900

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN CP	DRAWN BY CP	DART AEROSPACE USA, INC. BELLEVUE, WA	
CHECKED H	APPROVED H	DRAWING NO. D2904	Rev. B SHEET 1 OF 3
DATE 00.06.21		TITLE SA 315B SKIDTUBE ASSEMBLY SCALE NTS	
A	99.09.09	NEW ISSUE	
B	00.06.21	CHANGED ANGLES FOR HOLES	

PARTS LIST:

Qty -041	Qty -042	Part Number	Description
X		D2904-041	LH SKIDTUBE ASSEMBLY
	X	D2904-042	RH SKIDTUBE ASSEMBLY
2	2	D2646	CAP
4	4	D2648-3	WEARPAD
1	1	D2648-5	WEARPAD
1	1	D2656-13	WEARSHOE
1	1	D2656-33	WEARSHOE
1		D2904-1	SKIDTUBE
	1	D2904-2	SKIDTUBE
1	1	D2905	WEB
1	1	D2907	WEARSHOE
11	11	D2909	CROSS BOLT SPACER
2	2	D2910	SKIDTUBE DOUBLER
2	2	D2911	SKIDTUBE DOUBLER
2	2	D2912	SKIDTUBE DOUBLER
50	50	ALS7-1032-130 or AKS4-1032-130 or ALS4-1032-130 or ALS7-1032-130	INSERT
54	54	AN960JD10L	WASHER
256	256	MS20601AD4W3	RIVET
54	54	MS27039-1-08	SCREW

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CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D2904	Rev. B SHEET 2 OF 3
DATE 00.06.21		TITLE SA 315B SKIDTUBE ASSEMBLY	SCALE 1:20

GENERAL NOTES:

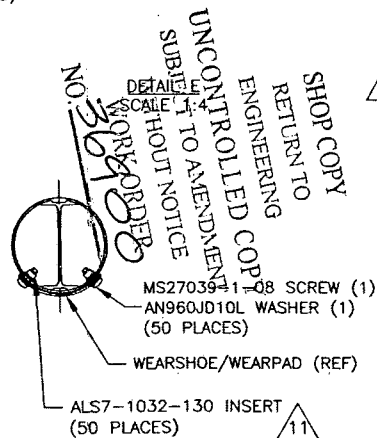
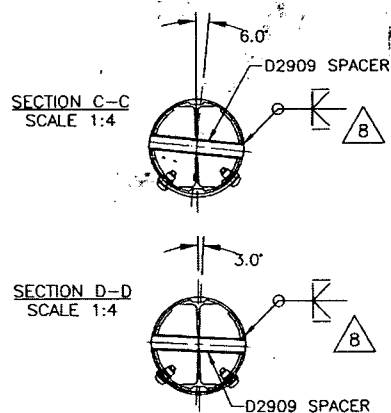
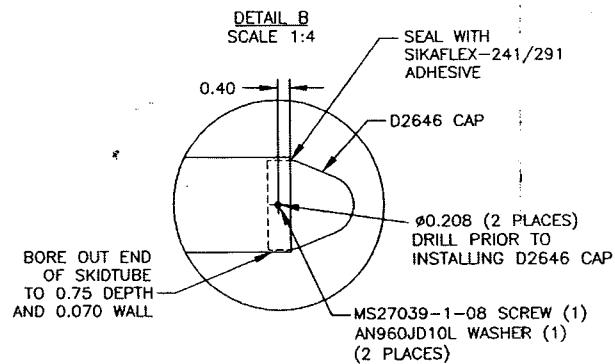
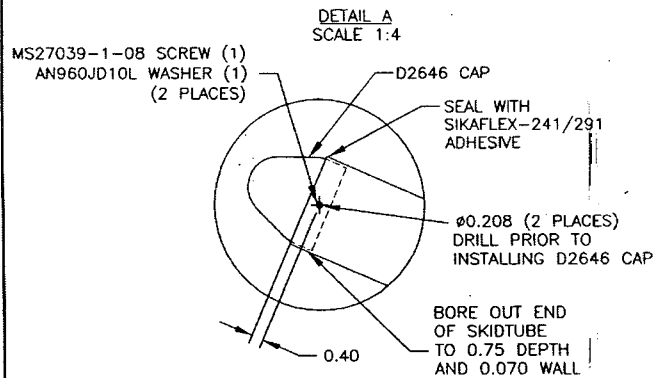
1. TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
2. MAKE D2904-1 AND D2904-2 FROM D2914 EXTRUSION (INITIAL LENGTH = 142.0).
3. DAMAGE TOLERANCE ON BENDING:
THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 7 INCHES ABOVE THE GROUND. NO GOUGING IS ACCEPTABLE IN THE FLAT PORTION OF THE TUBE. GOUGES UP TO 0.020 ARE ACCEPTABLE IN THE BENT PORTION OF THE TUBE. TUBE O.D. SHOULD BE 3.150 ± 0.010 IN THE FLAT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.
4. ALL HOLES DRILLED ON CENTERLINES EXCEPT THOSE NOTED BY SECTION C-C.
5. DRILL #30 HOLES ($\varnothing 0.128$ REF) TO LINE UP WITH $\varnothing 0.128$ HOLES IN D2910/D2911/D2912 DOUBLERS. C'SINK $\varnothing 0.239 \times 100^\circ$.
6. BOND D2905 WEB INTO D2904-1 (OR D2904-2) OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241/291 ADHESIVE PER DART QSI 015. ENSURE HOLES LINE-UP.
7. WELDING TO BE DONE PER DART QSI 004.
8. AFTER DRILLING, BENDING, AND INSTALLING WEB & DOUBLERS, PERFORM THE FOLLOWING FOR $\varnothing 0.500$ HOLES ONLY:
 - CHAMFER HOLE $0.050 \times 45^\circ$
 - INSERT D2909 SPACER (11 PLACES)
 - WELD INTO PLACE
 - GRIND FLUSH
 - DRILL OUT SPACER TO $\varnothing 0.406$
9. FINAL CONFIGURATION SHOULD HAVE THE FOLLOWING MINIMUM MECHANICAL PROPERTIES:
 - MINIMUM YIELD TENSILE STRENGTH = 35 ksi
 - MINIMUM ULTIMATE TENSILE STRENGTH = 38 ksi
10. FINISH:
 - ACID ETCH, ALODINE ASSEMBLY PER DART QSI 005 4.1 PRIOR TO INSTALLING D2905 WEB AND D2910/D2911/D2912 DOUBLERS.
 - POWDER COAT WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3
 - BLACK ANTI-SKID PAINT AS INDICATED TO 1.0 ABOVE SKIDTUBE CENTER-LINE PER DART 005 4.4 (OPTIONAL).
11. DRILL $\varnothing 0.297$ FOR ALS7-1032-130 INSERT USING DT8395 BEFORE FINISH. INSTALL ALS7-1032-130 INSERTS AFTER FINISH.

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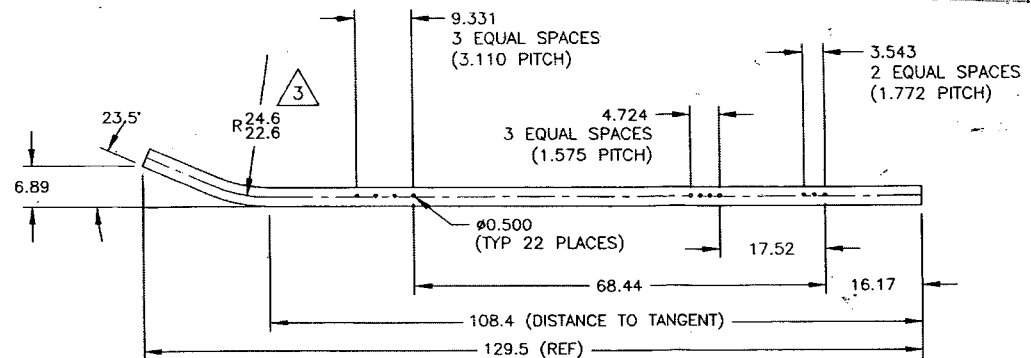
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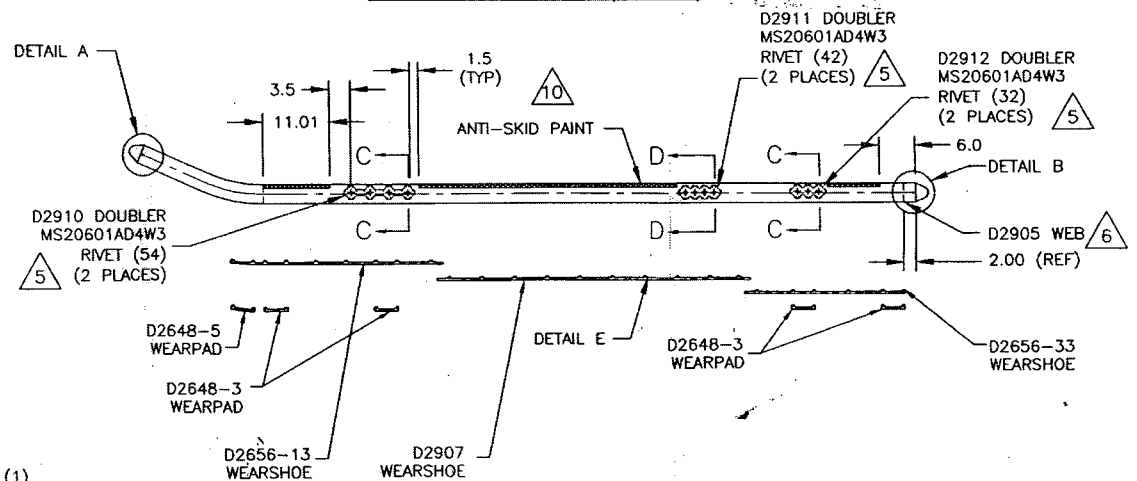
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D2904-1 BENDING/DRILLING DETAIL (SHOWN)
D2904-2 BENDING/DRILLING DETAIL (OPPOSITE)



D2904-041 LH ASSEMBLY DETAIL (SHOWN)
D2904-042 RH ASSEMBLY (OPPOSITE)



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DESIGN	UP	DRAWN BY	UP	DART DART AEROSPACE USA, INC. BELLEVUE, WA
CHECKED	#	APPROVED	#	DRAWING NO. D2904
DATE	00.06.21	TITLE	SA 315B SKIDTUBE ASSEMBLY	REV. B SHEET 3 OF 3 SCALE 1:20

RELEASED
00.01.01

NO. 152

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Eliot
Job number: B36809
Part number: A315668011
Description: Skid tube (Lama)
Welding Process: Tig[☒] Mig[]
Base material: Aluminum
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier: David Good Date of Test Coupon 08/04/24
Welder: Barclay Eliot Date of Test Coupon 08/04/24

The above named individual is qualified in accordance with AWS D17.1.2001 to weld